VanDeMark Chemical Inc. Lockport, New York.
Group 5 – Polycarbonate manufacturing, using Methylene chloride as solvent and processing aid.

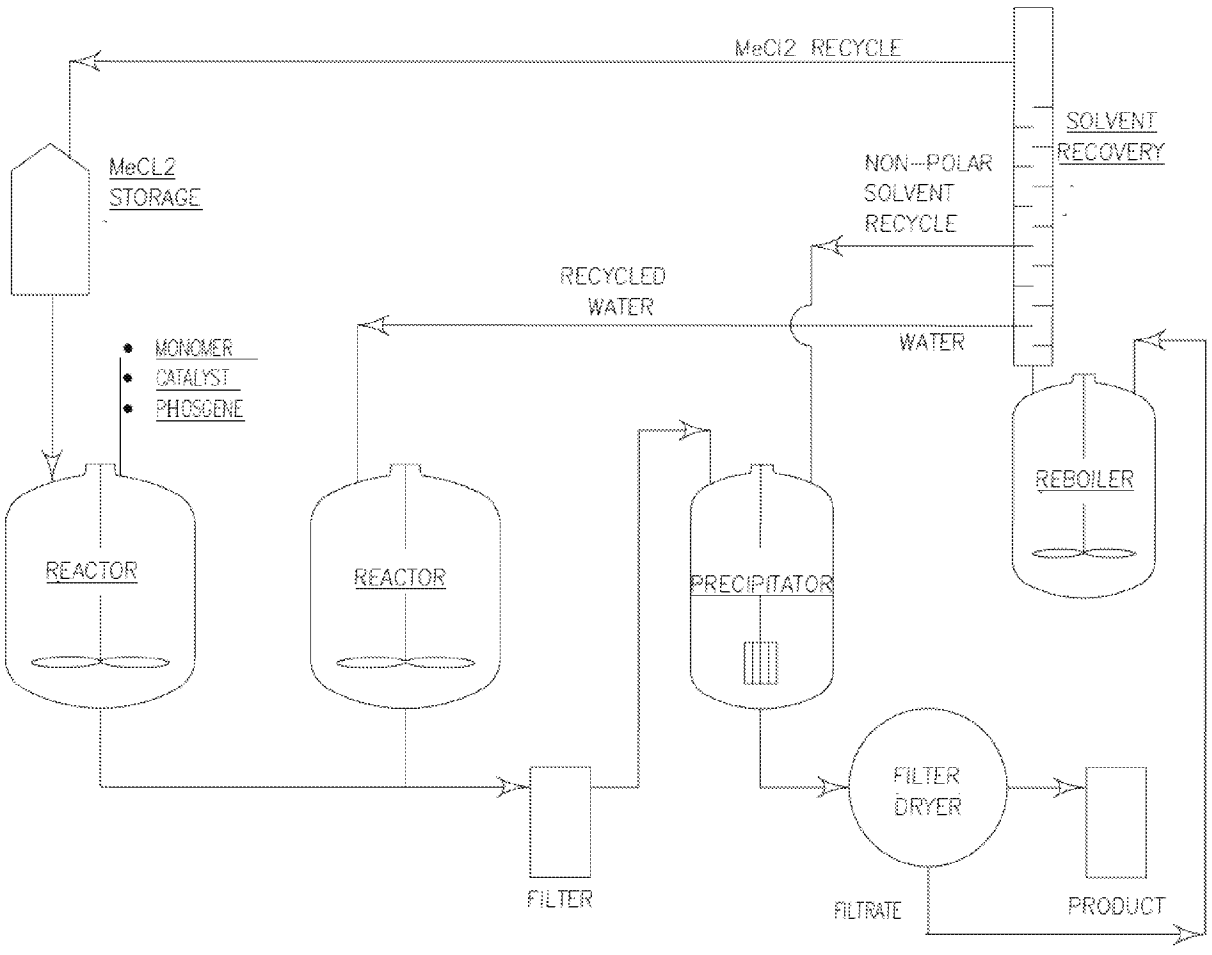
1) Your business (Questions for all groups)

a. How does your organization use methylene chloride? How much methylene chloride does your organization use? We use Methylene chloride as a solvent in the chemistry of making highly-specialized polycarbonates. We have about 20 metric tons circulating in our chemical process when it is running. This process runs 3 months each year.

b. Does your organization still use methylene chloride? What is the trend of use? For example, has your organization increased use of methylene chloride? Has use remained constant? Is use decreasing? Is your organization phasing out the use of methylene chloride? We plan to continue the safe use of methylene chloride. We hope to grow this business in the next few years. There is not a suitable substitute for methylene chloride in this application. We have looked at 1,2 dichloroethane but has greater toxicity, higher boiling point and would not dry properly in this application.

c. Can you describe the specific use, as well as the workplace and workplace setting where methylene chloride is used? We make Polycarbonates. These are highly specialized and require methylene chloride due to the superior solubility of polycarbonate in this solvent. This is used in a chemical plant reactor bay. This is an enclosed chemical system with several other hazardous chemicals including a severe inhalation hazard. Our process is regulated under OSHA Process Safety Management and EPA RMP.

d. Why does your organization use methylene chloride? What function does methylene chloride provide? Methylene Chloride is the solvent that the polycarbonate formation reaction takes place. Polycarbonates are soluble in MeCl. Other reactant chemicals are added including a monomer, catalyst and phosgene. The polycarbonate is formed in the solvent and then an anti-solvent is added to drive the precipitation of the polycarbonate from the methylene chloride. The slurry formed is filtered to separate the crystalline polycarbonate product from the methylene chloride. The polycarbonate product is then dried under vacuum to remove the entrained methylene chloride and anti-solvent. See Simplified Process Flow Diagram attached below. The filtrate and recovered solvents from drying are all collected to be distilled and recycled for reuse. Again, this entire process is contained in a closed loop reaction system designed to prevent the release of all vapors and prevent exposures to employees as well as the environment.



e. Where is your organization in the supply chain? (e.g., are you a processor – formulating another product with methylene chloride, a distributor, or final user of methylene chloride in an application?). Do you provide finished product to another small entity or to a large entity? We are the producer of the ultra-pure raw polycarbonate granules that we sell to other small business manufacturers to be later extruded into a finished product.

f. For what industries or applications do you provide products or services for? (e.g., aerospace, electronics, military, automotive, optics, museums/art restorations, academic, commercial laboratory, consumers, other) Polycarbonates are used to produce a vast array of products that improve the life-safety and quality. The application class for this particular polycarbonate is for gas separation. It is essential for oxygen generators and nitrogen separators. This particular application crosses multiple industries. It can be found in medical applications for the small oxygen generators, agronomics for padding fuselages with nitrogen in military and commercial airplanes, as we as marine applications in similar service.

h. If methylene chloride were not available, how would you adjust and what would the impacts be on your business? It is not possible to produce this polycarbonate in another solvent.

i. What are the benefits to your business of methylene chloride? Are there specific benefits for small businesses using methylene chloride as compared to benefits for larger

businesses? Polycarbonates were largely produced domestically but much of this moved off-shore due to cost. The reason we are producing this polycarbonate is that the foreign quality was considered poor and this application requires a very high purity polycarbonate granule for the next step in the process.

2) Workplace exposure (Questions for all groups)

a. How many employees, and what fraction of your employees, are exposed to methylene chloride, and for how long (days/year and hours/day)? We have two employees per shift on this process. Much of the reaction is monitored either in our control room about 150ft away, or on control system monitors in the process area. The Operators turn valves and monitor materials within the piping and reactors. They work 12 hours shifts, 36 hours one week and 48 hours the following week.

b. If you use a product containing methylene chloride, what product do you use and what is the concentration of methylene chloride in the product? NA

c. What work activities result in worker exposure to methylene chloride? And what type of exposure (dermal, inhalation)? Key exposure points:

1. Maintenance activities. (Possible Vapors of MeCl) We have procedures to perform these activities including Line-Breaks (opening equipment including vessels or piping). The process involves evacuating the equipment, purging it of chemicals including methylene chloride, and then suiting up in PPE for worst case scenario including supplied air respirators. The PPE can only be down-graded when we have established we meet our requirements for no exposure to the previous contents of the vessel. We have stringent requirements that are much lower than OSHA PELs.
2. Unloading MeCl into our process. (possible liquid MeCl in concentrated form). We have procedures and engineering controls for this activity. The Operator also wears PPE to include a chemical suit and full-face respirator with suitable canisters. The PPE is only to respond to emergency or un-expected release. The system is enclosed otherwise.

d. For each activity, in what physical state and concentration is methylene chloride? See above
e. Have you taken industrial hygiene monitoring data? If so, what was typical and high-end exposure to methylene chloride? Internally we have an action level that is one-half the OSHA action level. For these activities our IH monitoring at highest level was 14ppm for a STEL event. We implemented corrective actions to lower the exposure after this measurement. We can typically perform the above tasks with less than 5ppm exposure for the STEL event. Our normal PEL monitoring is typically non-detectable or less than 3ppm when detectable.

f. What engineering controls are used to minimize exposure to methylene chloride? How effective are those controls? We use ventilation to a carbon unit for fugitive exposure events. Within the process equipment we draw all process vapors through a multistage condensing unit to recover all the MeCL for recycling back into the process.

i. Would it be feasible to use additional engineering controls to minimize exposure to methylene chloride? If so, what might those engineering controls be? We believe we have sufficient controls within our unit to protect our people based on IH data that is lower than OSHA PEL.

ii. What is your experience with:

- Installing or updating ventilation and local exhaust, or - Equipment changes to reduce exposure? We are a Responsible Care and ChemSteward Company that is very conscious of the sustainability of our product and industry. Our engineering controls for fugitive emissions vent through a carbon vapor pack which is also monitored for break-through and then changed out.

g. What administrative controls and training do you use to minimize exposure to methylene chloride? Do you use training to minimize exposure to methylene chloride? We have an annual training event that we do before we start up the process that utilizes methylene chloride. It stresses the importance of utilizing the engineering controls, how to monitor, and why we perform IH monitoring. It also includes emergency response measures in event we have a loss of containment within the process.

h. Is personal protective equipment (PPE) is regularly worn by workers to minimize exposure to methylene chloride? Not as a routine because there is not an exposure scenario during normal operations. Events that do require PPE are described above.

i. If yes, could you provide more information regarding the type of PPE that is used? We utilize chemical barrier suits and supplied air for first breaks into equipment until monitoring information shows we can downgrade to a lower level. Air monitoring data must demonstrate air concentrations are within our lower action level to allow for any downgrade.

And would it be feasible to use PPE that provided a level of protection beyond what you are already using? Do you have experience with air supplied respirators? Do you have experience with other PPE? Our employees are trained on supplied air respirators. We have a PPE guidance document for each chemistry in our facility that describes the exact PPE needed for normal handling and upgraded PPE for line breaks and spill response.

ii. If no, would it be feasible to have workers wear PPE to minimize their exposure to methylene chloride? And what PPE would be feasible for workers to wear?

i. How many employees are located in the same room where the work activities related to methylene chloride are taking place but not necessarily handling methylene chloride? Methylene Chloride is not "Handled" in our plant. It is contained in a closed chemical process.

j. What do you do to comply with OSHA standards for methylene chloride? We are a facility that utilizes phosgene and chlorine to produce other hazardous chemicals. We are an OSHA PSM/EPA-RMP facility as a result. We are following OSHA 1910.1052 including employee physicals, monitoring and respiratory protection standards. We are using engineering controls to prevent employee exposures where there is the potential for an interaction with chemistry. PPE is required as a secondary safety measure but our data demonstrates it is not needed in normal operation. We are performing IH monitoring as mentioned previously.

3) Regulatory options (Questions for all groups)

a. Which of the regulatory options presented today would you recommend? The ECEL is likely something we are already in compliance with provided it is reasonable value. We understand you are looking for a lower PEL. Our data suggests this is possible. However, the chemical industry will typically function with practice that provide a level of margin between our exposure levels and the PEL set up

Agencies. If the value for the ECEL is lowered considerably it is not likely that we will be able to maintain the comfort margin we strive to consistently achieve.

b. Cost estimates: In your experience, are the cost estimates reasonably representative? Do you have additional information to improve the cost estimates?

c. Can you think of ways to add flexibility to this rulemaking for your small businesses?

d. How do you learn about EPA regulations and what you should do to comply?

e. What is the best way to reach out to members of your industry? We typically learn of regulations on the horizon through the trade organizations we belong to. One is SOCMA, (Society of Chemical Manufacturers and Affiliates) the other is ACC (American Chemistry Council)

4) Additional questions for users of products containing methylene chloride: substitutes and alternatives (Questions for groups 1 – 5)

a. What chemicals or processes have you considered as an alternative to using methylene chloride or a product containing methylene chloride? Why? How do these chemicals or processes compare to current use containing methylene chloride? More specifically:

i. Do you currently use any alternatives to methylene chloride (or product)? Unfortunately, there is not an alternative for polycarbonate production that will produce a product of this purity. The vapor pressure and boiling point are key for the combined solvent (MeCL) and the antisolvent (an aliphatic hydrocarbon). We have to be able to strip these solvents off the polycarbonate in the drying step without 'burning' the product. We use a deep vacuum and just enough heat to do this and methylene chloride is key. MeCL is also a very small molecule so it is easier to pull though the drying polycarbonate. IF we lose the ability to use MeCL we would see this operation move to Asia which is the competition for this product.

ii. Did you try to switch to another chemical, product, or process only to switch back? NA
If so, what did you switch to, why did you switch back, and what made you switch in the first place? NA
iii. What are the relative advantages and disadvantages of different substitutes and/or processes that you have considered, including in terms of exposure, cost, and hazard? NA

iv. Provide specific information related to each substitute chemical, product, or process related to the use of alternative chemicals/products and compare to methylene chloride: Ethylene dichloride or 1,2 dichloroethane is an alternative. However, it is more toxic than is methylene chloride it is flammable, has a much higher boiling point and four times more expensive.

- Identification of alternative chemical/product/process We did not pursue this alternative as the original technology was in methylene chloride and utilizing a non-flammable solvent has significant process safety benefits.

- How much of the alternative product/chemical would be needed to perform same activity. We would still need about the same amount as it the process is based on a volume basis.